CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/CEMENT/2017-18 Date: 12.04.2017

TEST REPORT ON CEMENT

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
*** Name of Work**	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
*** Reference**	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
*** Sample ID**	:	Cement
Sample Received on	:	10.04.2017
Period of Testing	:	10.04.2017 to 12.04.2017

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988 (RA-2014)	27.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	180 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	475 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988 (RA-2014)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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Assistant Executive Engineer,
Kodigehalli Sub Division,
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Bangalore.

VIDYARANI P.K.
Technical Manager

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/SAND-Gradation/2017-18 12.04.2017

TEST REPORT ON SIEVE ANALYSIS OF FINE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of Work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	Fine Aggregates
Technical Reference	:	IS : 2386 (Part 1) - 1963 (RA-2011)
Sample Received On	:	10.04.2017
Date of Testing	:	12.04.2017

Total Wt. of Aggregates in gms = **1000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	94.50	90-100	90-100	90-100	95-100
2.36	74.10	60-95	75-100	85-100	95-100
1.18	52.20	30-70	55-90	75-100	90-100
600 Micron	26.60	15-34	35-59	60-79	80-100
300 Micron	13.70	5-20	8-30	12-40	15-50
150 Micron	7.70	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/AGG/GR/2017-18 12.04.2017

TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
*** Name of Work**	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
*** Reference**	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
*** Sample ID**	:	Coarse Aggregates (40mm)
Technical Reference	:	IS : 2386 (Part 1) -1963 (RA-2011)
Sample Received on	:	10.04.2017
Date of Testing	:	12.04.2017

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.42	95-100	85-100
20	38.36	30-70	0-20
10	13.86	10-35	0-5
4.75	3.34	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under graded specific limits.

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TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of Work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	Coarse Aggregates (20mm)
Technical Reference	:	IS : 2386 (Part 1) -1963(RA-2011)
Sample Received on	:	10.04.2017
Date of Testing	:	12.04.2017

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2011)	
		Graded	Single Sized
40	100	100	100
20	97.44	95-100	85-100
10	32.16	25-55	0-20
4.75	7.12	0-10	0-5

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Remarks : This sample is under Graded specific limits

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.:CTCE/BBMP/NVR/W.No.07/KRIDL/Steel/2017-18

13.04.2017

TEST REPORT ON REINFORCEMENT STEEL

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Samples ID	:	8mm Bar
Technical Reference	:	IS: 1786-2008
Date of Testing	:	13.04.2017

Sl No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm2	Tensile strength (Ultimate stress) N/mm2	Elongation percent gauge length		
1	8	0.39	512	553	13.05	O.K	O.K

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Job No.:CTCE/BBMP/NVR/W.No.07/KRIDL/Steel/2017-18 13.04.2017

TEST REPORT ON REINFORCEMENT STEEL

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* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Samples ID	:	10 mm Bar
Technical Reference	:	IS: 1786-2008
Date of Testing	:	13.04.2017

Sl No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm2	Tensile strength (Ultimate stress) N/mm2	Elongation percent gauge length		
1	10	0.62	513	554	13.30	O.K	O.K

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/Cube/2017-18 15.05.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of the work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	RCC Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	15.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	17.04.2017	15.05.2017	8.168	489.5	21.76
2	17.04.2017	15.05.2017	8.234	496.7	22.08
3	17.04.2017	15.05.2017	8.358	500.9	22.26

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* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of the work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	RCC Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	15.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	17.04.2017	15.05.2017	8.268	506.4	22.51
2	17.04.2017	15.05.2017	8.314	526.8	23.41
3	17.04.2017	15.05.2017	8.462	499.8	22.21

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

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*** Reference**	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
*** Sample ID**	:	RCC Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
*** Grade of Concrete**	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	17.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.04.2017	17.05.2017	8.064	516.5	22.96
2	19.04.2017	17.05.2017	8.186	532.1	23.65
3	19.04.2017	17.05.2017	8.244	522.8	23.24

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*** Sample ID**	:	RCC Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
*** Grade of Concrete**	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	17.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.04.2017	17.05.2017	8.157	498.2	22.14
2	19.04.2017	17.05.2017	8.234	525.4	23.35
3	19.04.2017	17.05.2017	8.361	515.7	22.92

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*** Reference**	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
*** Sample ID**	:	Cement Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
*** Grade of Concrete**	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	19.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.04.2017	19.05.2017	8.094	485.9	21.60
2	21.04.2017	19.05.2017	8.167	511.8	22.75
3	21.04.2017	19.05.2017	8.226	490.8	21.81

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* Grade of Concrete	:	M_{20}
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Sample Received on	:	19.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.04.2017	19.05.2017	8.195	488.6	21.72
2	21.04.2017	19.05.2017	8.243	529.1	23.52
3	21.04.2017	19.05.2017	8.317	491.4	21.84

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/Cube/2017-18 22.05.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of the work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	Cement Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	22.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	24.04.2017	22.05.2017	8.268	497.2	22.10
2	24.04.2017	22.05.2017	8.355	513.8	22.84
3	24.04.2017	22.05.2017	8.496	525.8	23.37

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/Cube/2017-18 22.05.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of the work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	Cement Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	22.05.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	24.04.2017	22.05.2017	8.176	529.4	23.53
2	24.04.2017	22.05.2017	8.245	512.4	22.77
3	24.04.2017	22.05.2017	8.324	495.2	22.01

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Job No.: CTCE/BBMP/NVR/W.No.07/CSR-04/317aa/Pre Slab/2017-18 05.05.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CORE

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy** #92, 7th main road 4th cross, J C nagara, Mahalaxmipuram(P) Bangalore- 560 086.
* Name of work	:	Construction of drain and roads in main roads of nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/KODIGEHALLI/QC/PR/204/2017-18 Dated: 10.04.2017
* Sample ID	:	Precast Slab (100mm thick)
* Grade of Concrete	:	M_{20}
Techinical Reference	:	IS:516-1959 (RA- 2013), SP-24:1983.
Sample Received on	:	01.05.2017
Date of Testing	:	05.05.2017

Sl. No	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	79.00	0.389	2507.80	1.58	0.955	30.95	15.76	17.02	17.83	22.29
2	50.00	81.00	0.401	2521.33	1.62	0.959	35.41	18.03	19.48	18.68	23.35
3	50.00	82.00	0.408	2534.06	1.64	0.961	33.57	17.10	18.46	17.75	22.18

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Job No.: CTCE/BBMP/W.No.07/NVR/WMM/Gradation/2017-18 10.05.2017

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386 (part-1)1963 (RA-2016)
Date of Testing	:	10.05.2017

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-1
53	0	0	0	100	100
45	160	160	3.2	96.8	95-100
22.4	1560	1720	34.40	65.60	60-80
11.2	1020	2740	54.80	45.20	40-60
4.75	590	3330	66.60	33.40	25-40
2.36	480	3810	76.20	23.80	15-30
0.600	515	4325	86.50	13.50	8-22
0.075	555	4880	97.60	2.40	0-8

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Job No.: CTCE/BBMP/W.No.07/NVR/WMM/AIV/2017-18 10.05.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS: 2386 Part IV
Date of Testing	:	10.05.2017

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	303	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	20.63	20.68	**20.66**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/NVR/WMM/Shape.T/2017-18 10.05.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386(Part 1) 1963 (RA 2016)
Date of Testing	:	10.05.2017

Sl.No.	Description	Result
1	Flakiness Index	11.63%
2	Elongation Index	13.28%
3	Combined Flakiness & Elongation Index	24.91%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/NVR/CSR-04/313k/QB(SDBC)/2017-18 17.05.2017

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* Customer	:	**Asst. Executive Engineer**, Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	15.05.2017
Period of Testing	:	17.05.2017

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2014)	84	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2014)	45	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2014)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2014)	298	Min. 220

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/AIV/2017-18 17.05.2017

TEST REPORT ON AGGREGATE IMPACT VALUE

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of the Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Semi Dense Bituminous Concrete
Technical Reference	:	IS : 2386 (Part-4)-1963 (RA-2011)
Type of Mix	:	Hot Mix Plant, Bangalore
Date of Testing	:	17.05.2017

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	396	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	310	307	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	20.92	22.47	21.70

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.:CTCE/BBMP/W.No.07/NVR/SDBC/Shape_T/2017-18 17.05.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
Sample ID	:	Semi Dense Bituminous Concrete
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
Date of Testing	:	17.05.2017

Sl.No.	Description	Result
1	Flakiness Index	12.38%
2	Elongation Index	13.39%
3	Combined Flakiness & Elongation Index	25.77%

* Information is furnished by the Customer/Representative

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/Stripping/2017-18 17.05.2017

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATES (STATIC IMMERSION TEST)

* **Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* **Agency**	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* **Name of the work**	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* **Reference**	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* **Sample ID**	:	Semi Dense Bituminous Concrete
Technical Reference	:	IS: 6241
Date of Testing	:	17.05.2017

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping,	Average,	Average Retained
1	3.2	3.30	96.70
2	3.3		
3	3.4		

* Information is furnished by the Customer/Representative

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/Sp_Wa/2017-18 18.05.2017

TEST REPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION TEST

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of the Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Semi Dense Bituminous Concrete
Technical Reference	:	IS : 2386 (Part-3)-1963 (RA-2011)
Type of Mix	:	Hotmix Plant, Bangalore
Date of Testing	:	18.05.2017

Sl.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2019	2022	
2	Weight of basket suspended in water	W_2 g	755	2020	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1264	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2012	2013	2014	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	747	749	747	
6	Weight of oven dried aggregate	W_4 g	2002	2003	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.680	2.674	2.684	2.679
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.716	2.710	2.717	2.715
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.50%	0.45%	0.48%

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/Bit/2017-18 18.05.2017

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of the Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
Sample ID	:	Roads in Nethajinagara Ward No.07
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	18.05.2017

BITUMEN CONTENT DETERMINATION

SL. No.	Description	Trail 1	Trail 2
1	Weight of Mixture before Test, g	500	500
2	Weight of Mixture after Test, g	475	474
3	Weight of Asphalt and Mineral matter	-	-
4	Weight of Mineral Matter, g.	-	-
5	Weight of Ash, g		
6	Weight of Bitumen Extracted, g. (corrected)	25	26.00
7	Bitumen content in %	5.00	5.20
8	Average	**5.10**	

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/Bit/2017-18 18.05.2017

TEST REPORT ON BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Roads in Nethajinagara Ward No.07
Technical Reference	:	IS2386 and IRC:SP:11-1984
Date of Testing	:	18.05.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	27.26	5.74	5.74	94.26	90-100
4.75	262.5	55.26	61.00	39.00	35-51
2.36	52.26	11.00	72.00	28.00	24-39
1.18	35.26	7.42	79.43	20.57	15-30
0.3	30.23	6.36	85.79	14.21	9-19
0.075	38.25	8.05	93.84	6.16	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	30.25	6.38	6.38	93.62	90-100
4.75	264.5	55.80	62.18	37.82	35-51
2.36	53.15	11.21	73.40	26.60	24-39
1.18	35.25	7.44	80.83	19.17	15-30
0.3	32.15	6.78	87.62	12.38	9-19
0.075	32.25	6.80	94.42	5.58	3-8

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Job No.: CTCE/BBMP/W.No.07/NVR/SDBC/AGG/2017-18 18.05.2017

TEST REPORT ON AGGREGATE GRADATION TEST

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. N. Venkata Reddy,** #92, 7th Main Road, 4th Cross, J.C. Nagara, Mahalakshmipuram (P), Bangalore - 560 086.
* Name of the Work	:	Construction of Drains and Roads in Cross Roads of Nethajinagara in Ward No.07, Byatarayanapura, BBMP, Bangalore.
* Reference	:	AEE/Kodigehalli/QC/PR/227/2017-18 Dated: 05.04.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	:	18.05.2017

Total Weight of Sample: **5300** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH Table 500-15 specification
9.5	360	6.8	6.79	93.21	90-100	
4.75	2650	50.0	56.79	43.21	35-51	
2.36	710	13.4	70.19	29.81	24-39	
1.18	485	9.2	79.34	20.66	15-30	
0.3	440	8.3	87.64	12.36	9-19	
0.075	365	6.9	94.53	5.47	3-8	

Total Weight of Sample: **5250** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH Table 500-15 specification
9.5	435	8.3	8.29	91.71	90-100	
4.75	2595	49.4	57.71	42.29	35-51	
2.36	845	16.1	73.81	26.19	24-39	
1.18	520	9.9	83.71	16.29	15-30	
0.3	240	4.6	88.29	11.71	9-19	
0.075	265	5.0	93.33	6.67	3-8	

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